

BOOK REVIEWS AND BOOK NOTICES

BOOK REVIEWS

THE EPIDEMIOLOGY OF MALARIA AND FILARIASIS IN THE OK TEDI REGION OF WESTERN PROVINCE, PAPUA NEW GUINEA. Gerrit J. T. Schuurkamp. 1993. Medical Department, Ok Tedi Mining Limited, Hong Kong. 341 pp.

This book presents the results of Gerrit Schuurkamp's Ph.D. research in a format that is only "modified slightly" from his thesis. As such, the book is arranged in 12 chapters, including an introductory chapter that reviews the history of the region, a "methods" chapter and a "general conclusions" chapter. Most chapters start with an introduction concerning some aspect of malaria or filaria epidemiology and end with a numerical listing of conclusions. The book is illustrated with a large number of beautiful color and sepia photographs taken by the author.

The bulk of each chapter is filled with tabular and graphical presentation of data with statistical analyses. Three major aspects of malaria epidemiology in Papua New Guinea are examined: passive case detection, drug resistance, and natural development of immunity to malaria. Bancroftian filariasis is discussed predominantly from the perspective of the effect of diethylcarbamazine on microfilarial rates and its effect on splenomegaly.

Contained in this book is a wealth of tabulated malariometric and demographic data on the people in the Tabubil area of Western Province, Papua New Guinea, including spleen rates, parasite rates, level of parasite resistance to chloroquine and amodiaquine, hemoglobin levels, rates of ovalocytosis, and glucose 6-phosphate dehydrogenase deficiency. The volume of details concerning these parameters reflects the prodigious amount of work required to collect and assimilate the data and is not often easily obtained from the literature for an endemic region. Unfortunately, these parameters are sometimes obscured by the unnecessary use of 3-dimensional graphs in the text.

Much of the book reads like the results section of a manuscript, making it difficult to grasp important points. This is alleviated to a certain extent by the conclusions with which each chapter ends. However, it would have been helpful to expand the general conclusions section to assist the reader in digesting the vast amount of data.

The title of the book does not accurately reflect the contents, for although the human hosts and the stages of the malarial and filarial parasite in the human are described, discussion of the vectors is confined to approximately 2 pages of literature review in the final chapter.

Like many Ph.D. theses, the author sometimes tries to extrapolate more from the data than can be safely inferred. For example, the author tries to make the case that chloroquine-sensitive and -resistant strains of *Plasmodium falciparum* are antigenically different, based on the 2-3-fold differences in peripheral blood densities observed on the day of presentation to a clinic. Although the author states that antimalarials are only available from the Ok Tedi Medical Department, this statement is not documented with data on antimalarial availability obtained by analysis of randomly obtained urine or blood samples. It is possible that the differences observed are a result of ingestion of subcurative doses of antimalarials obtained either by hoarding of drugs from previous clinic visits or obtained outside of the Ok Tedi region by the patient or his friends (as has been documented by Cattani in the Madang Province).

Despite some shortcomings discussed above, the book documents the utility of passive case detection for monitoring the efficacy of intervention strategies and the effectiveness of residual insecticide spraying to control malaria in this remote area. The book also raises questions regarding the effect on the health of local people by the importation of a workforce largely from outside the area. Few books concerned with the epidemiology of malaria make as much data available: this is both the book's strength and its weakness. The book will be of more interest to established malaria researchers and modelers than students. The book is available, free of charge, by writing to Ok Tedi Public Health, Ok Tedi Mining Limited, PO Box 1, Tabubil, Western Province, Papua New Guinea.

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INSTRUCTION AND INFORMATION MANUAL FOR EVALUATORS OF THE MALARIA SURVEILLANCE PROGRAMME IN TRINIDAD AND TOBAGO. Dave D. Chadee, Rosemarie Paul and Calum M. L. Macpherson. 1993. Ministry of Health, Trinidad and Tobago. 30 pp.

Malaria was eradicated from the Republic of Trinidad and Tobago by 1965, but imported cases from travelers from malaria-endemic countries continue to jeopardize this nation. This excellent instructional manual has been written primarily for Trinidadian health workers responsible for malaria surveillance throughout the islands of the country, but it could be used for malaria program training purposes in other areas of the world as well.

A brief informative review of the importance of malaria is given, along with the program phases used around the world to eradicate this disease. Detailed technical information is given about the 4 species of human plasmodia including the parasite cycle in humans. Thirteen species of anophelines are found in Trinidad, of which *Anopheles aquasalis*, *Anopheles bellator*, and *Anopheles albicans* have been proven by dissection to carry malaria parasites. Detailed instructions are given for the taking and preparation of blood slides, and the making of anopheline larval and adult surveys.

Reintroduction of malaria is a constant threat to this country. Ways that introduction occurs are given, as well as measures being taken to prevent this from happening. A useful glossary of malaria terms is also included.

For information as to the availability of this concise, well-written program manual, contact Dr. Dave D. Chadee, Insect Vector Control Department, 3 Queen Street, St. Joseph, Trinidad.

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PHYSICIAN'S GUIDE TO ARTHROPODS OF MEDICAL IMPORTANCE. Jerome Goddard. 1993. CRC Press, Boca Raton, FL. 332 pp. \$95.00.

Dr. Jerome Goddard, a medical entomologist with the Mississippi State Department of Health and former officer of the U.S. Air Force, has compiled a well-written book to furnish health-care providers with clear, concise information on arthropods of medical importance and the treatment of arthropod-caused conditions and their sequelae.

The book is organized into two main sections. Part I, "Pathological Conditions Caused by Ar-

thropods and Principles of Their Treatment," consists of 7 chapters. Chapter 1 deals with the principles and current recommendations for treatment of allergy, stings, bites, dermatitis, myiasis, and delusions of parasitosis. These conditions discussed separately in chapters 2 to 7.

Part II, "Arthropods of Medical Importance," consists of 20 chapters listed alphabetically by their common names from "Ants" to "Wasps." Each chapter contains one or more drawings of the arthropod, its general and medical importance, description, geographic distribution, biology, lesion or disease transmission, current directions for treatment, key reference, and as many as 4 to 34 additional references.

The book contains many topics not found in other textbooks such as good discussions of the Africanized or killer bees, imported fire ants, and Lyme disease. In addition to many disease vectors and pest mosquitoes found in the United States, mosquito workers will note inclusion of a number of important vectors overseas such as *Anopheles gambiae* and *Culex tritaeniorhynchus*.

The book ends with a 4-page glossary of entomological terms and a 23-page index that includes various pathological conditions and many common names of arthropods.

Dr. Goddard wrote, "It is not the intent of this reference to make entomologists out of the readership. Specialists should be consulted whenever possible for definitive identification of the arthropod." The primary focus of the book is furnishing health-care providers with easy access to information and references to these arthropods, their effects on humans, and current information on treatment. It may also serve as a textbook or as a reading assignment for classes in medical entomology.

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THE SCIENCE OF ENTOMOLOGY, THIRD EDITION. W. S. Romoser and J. G. Stoffolano, Jr. 1993. Wm. C. Brown Publishers, Dubuque, IA, Melbourne, Australia, and London, England. 532 pp. \$60.90.

The new edition of "The Science of Entomology" should be well received by those looking for a well-rounded introduction to the field of entomology. Although quite similar in many respects to previous versions of this text, minor revisions have updated the coverage of many subject areas and several topics previously covered only briefly have been expanded to provide additional information. The Romoser-Stoffo-

lano authorship arrangement has resulted in a readable book that should prove useful to students and faculty alike.

As with previous editions, text material is arranged in a number of related topics areas. The first of these deals with insect structure and function (Part One), the second with ecological subjects (Part Two), the third with insect systematics and evolution (Part Three), and the fourth with applied entomology (Part Four). Part One consists of several chapters from earlier editions revised only slightly to update subject content. Part Two, expanded from a single chapter in the second edition, contains a lot of new information, including data on insect and plant interrelationships and other useful environmental topics. The treatment of insect classification and evolution in Part Three is similar to that found in Romoser's second edition but some rewriting and regrouping has resulted in more information than in the past (3 rather than 2 chapters). Part Four contains more new information than elsewhere in the text, reflecting the many changes that have occurred in insect control practices during recent years.

The amount of new subject matter provided with text revisions should improve the value of the book as a teaching tool. The chapter dealing with behavior, for example, has been updated with an impressive amount of added material. The expanded unit dealing with ecology is well done and gives a balanced overview of important environmental topics needed today by entomologists. New information included in the economic entomology unit possibly adds more to this edition than any other change. The comments on useful insects are placed first among topics discussed, a welcome change in approach. The treatment of control measures includes at least introductory material on most modern methods. The section dealing with systematics and evolution reflects current knowledge in these areas and provides much useful information regarding the taxonomy of various insect groups. The lack of dichotomous keys to aid in insect identification, however, is a serious handicap for beginning students and will limit acceptance of this book as an introductory text.

Those who are familiar with earlier versions of the "Science of Entomology" will be pleased by format changes in the third edition. The new publisher, Wm. C. Brown Publishers, has done a great job designing an attractive book. The large page size and double column arrangement of text material makes reading less a chore than with earlier editions. Illustrations are positioned among text materials in a reasonable fashion and are easy to interpret. Resource citations are numerous, with references grouped by chapter as

an appendix at the back of the text material. It would have helped, however, if chapter numbers cited with the reference list had been set in a more prominent type style, but of course, this is a minor matter. A glossary, list of credits, and an extensive index are also included as appendices. All in all, the authors and Wm. C. Brown editorial staff have produced a book rich in content and seemingly free of major errors. Most entomologists will want to place this book in their library.

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MOSQUITO ECOLOGY. FIELD SAMPLING METHODS, 2nd ed. M. W. Service. 1993. Elsevier Applied Science, London and New York. 988 pp. ISBN: 1-85166-798-9.

Anyone who has attempted to review the literature on some aspect of sampling mosquitoes knows how complex and confusing the task is, even for a search with a relatively narrow scope. The papers published in the *Journal of the American Mosquito Control Association* and *Mosquito News* alone are enough to discourage most people. Thus, it is no wonder that mosquito ecologists have eagerly awaited the second edition of this book. The first edition has sat on my bookshelf within easy reach for many years. It has become badly worn from frequent use, and because others have borrowed it so often, I suspect the second edition will share a similar fate.

The second edition follows the organization and content of the first edition closely. However, it is thoroughly revised and expanded, with nearly double the number of pages, and with a larger-sized format. As Professor Service tells us, this increased size has resulted from the enormous expansion of published studies on the ecology of mosquitoes since the appearance of the first edition, especially in the areas such as estimation of adult mosquito survivorship, and tree-hole and container-breeding mosquitoes.

This is a book designed for field workers needing specific information on sampling methods for mosquitoes. The first chapter covers egg sampling methods, the second larval sampling methods. Chapters 3 through 9 cover a wide variety of topics relating to adult sampling methods. Methods for estimation of survival of adult and immature mosquitoes are discussed in Chapter 10, and Chapter 11 addresses the topic of species diversity indices and similar quantitative estimates used in ecology. A short final chapter has been added on ecological and statistical publications.

This book is much more than a cookbook approach to field sampling methods, although it can be used for that purpose. Various methods are critically reviewed, and Professor Service points out the advantages and disadvantages of the various approaches described. In discussing a published method for separating and recovering mosquito eggs from soil samples, we are advised: "This series of flotations and decantations seems excessively laborious and it should in many instances be possible to omit some of them".

Sampling bias is an important consideration in all methods used in mosquito ecology. This is covered for larval sampling, as is the analysis of dispersion and aggregation of populations of mosquito larvae, an important, but often ignored, factor in sampling of larvae. I would have liked to have seen a more detailed description of remote sensing techniques used to estimate the occurrence of larval breeding sources, and especially a more critical evaluation of the usefulness of these approaches. However, I agree with Professor Service's conclusion that "it remains to be seen how reliable and useful satellites will be to mosquito ecologist or vector control operators".

The chapter on larval sampling does not cover the subject of water sampling and testing. This subject may be somewhat outside the scope of this book, but it is certainly closely related, and it is difficult to find a review of this subject elsewhere. For years, mosquito ecologists have collected data on pH, salinity, conductivity, and other factors associated with presence or absence of mosquito larvae, but the data often remain buried in laboratory notebooks.

The chapters on sampling of adult mosquitoes represent the central core of this book. The first chapter in this section is preceded by a short overview of adult mosquito sampling in general. I wish this could have been in somewhat greater detail, with an expanded discussion of biases associated with the various approaches. However, these are covered to some extent in the initial paragraphs of each of the following chapters on various sampling approaches. The treatment of adult sampling in this series of chapters is comprehensive and critical. Subjects range from the whimsical (the description of a trap devised from a toy called the "Star Beam") to the highly mathematical approach to the estimation of survival of anopheline mosquitoes infected with malarial parasites.

The subject of carbon dioxide and light traps for adult mosquito sampling is exhaustively covered. Probably every trap ever built is described in detail. Every aspect of trap design is also covered, including light source, type of electricity, killing agents, trap color, types of motors and

fans, and the effect of moonlight. If there is anything you are curious about concerning these kinds of traps, and it isn't discussed, it probably isn't worth worrying about.

Throughout, this book is well written and well illustrated. It benefits from Professor Service's lucid writing style and his clear explanations of often esoteric mathematical approaches. In those instances where the mathematics involved will probably overextend even readers with above-average mathematical skills, Professor Service provides suggestions for further reading.

The term "indispensable" is overused in book reviews, but I find it hard to imagine that any person studying mosquitoes in the field could afford not to have constant access to this book.

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PROCEEDINGS OF THE EIGHTIETH ANNUAL MEETING OF THE NEW JERSEY MOSQUITO CONTROL ASSOCIATION. H. R. Rupp (editor). 1993. Available from Headlee Research Laboratories, P. O. Box 231, New Brunswick, NJ 08903. x + 163 pp.

Twenty-nine presentations are reported in this number of the New Jersey Proceedings. Additionally there are listings of personnel in 19 county and 3 state offices. Detailed minutes of the annual business meeting are included.

Three papers deal with administrative matters, 5 concern biological control, and 5 focus on insecticidal control. Other papers may be categorized as follows: EEE (3), tick suppression (3), mosquitoes in tires (2), research techniques (2), rodent control, rabies, heartworm, beekeeping, the threatened swamp pink, and emergency mosquito control following Hurricane Andrew.

Among the facts recorded are the following:

The Office of Mosquito Control Coordination of the New Jersey Department of Environmental Protection and Energy sponsors a state-wide program for increasing the distribution of *Gambusia*.

Carbaryl is the acaricide of choice for suppression of *Ixodes scapularis* populations.

Approximately 3,000 tires were discovered by the helicopter pilot of the Cape May County Mosquito Extermination Commission in May 1991. In October 1992 Joseph Robinson, who had dumped the tires, was fined \$3,000. In January 1993 the tires had not been moved. Next year we may learn whether the tires were removed and whether Mr. Robinson was jailed.

The laser diffraction method provides an ac-

curate understanding of ULV sprayers and the droplets they produce. Droplet size should be monitored and nozzles properly calibrated throughout the operational season.

In Delaware, *B.t.i.* provided inconsistent control of salt-marsh mosquito larvae.

In Rhode Island an experiment with *Coelomomyces psorophorae* var. *halophilus* suggested that this pathogen is not a significant mortality factor affecting *Aedes taeniorhynchus* larvae.

No human or equine cases of EEE were reported in New Jersey in 1992.

The production of this volume is the work of a highly competent editor.

W. E. Bickley

THE ANNALS OF MEDICAL ENTOMOLOGY, Volume 1, No. 2. 1992. S. C. Husainy (editor and publisher). P. O. Box 62, G.P.O., Raipur (M. P.) 492001 India.

The birth of this journal was reported in *J. Am. Mosq. Control Assoc.* 8(3):345. The number of issues per year has been reduced from 4 to 2 with the subscription rate also reduced to U.S. \$8.00. The journal is paying its own way, and Dr. Husainy has received notes of encouragement from scientists throughout the world.

Volume 1, No. 2 contains 2 articles on mosquito control—one on biology and one on physiology; a fifth paper concerns public lice.

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MEDICAL INSECTS AND ARACHNIDS. Richard P. Lane and Roger W. Crosskey (editors). 1993. Chapman & Hall, London and New York. xv + 723 pp. \$145.95 (cloth). ISBN: 0-412-40000-6.

Recently, a coworker at the U.S. Army's Aberdeen Proving Ground called me with an urgent request: "Rich, I have to teach in a few days, and I can't find any illustrations of the African tumbu fly (*Cordylobia anthropophaga*). Can you help me?" "Have you checked Lane and Crosskey?" I replied resplendently (having just been handed a copy for review). "If my memory serves me correctly, I think you'll find a female specimen illustrated on page 405." Telling discourse, for with the publication of this volume, the long-suffering world of medical entomology finally has a successor to Harwood and James, whose last iteration, *Entomology in Human and Animal Health* (1979, Macmillan), has long been both out of print and out of date.

This book focuses on the systematics and ecology of arthropods that are important in human health. Working closely with the editors, 13 stellar authorities on vector taxonomy and biology

have contributed their strengths, often synergistically, to 19 chapters: General Introduction (Lane and Crosskey), Introduction to Arthropods (Lane), Introduction to Diptera (Crosskey), Phlebotominae (Lane), Culicidae (M. W. Service), Simuliidae (Crosskey), Ceratopogonidae (J. Boorman), Tabanidae (J. E. Chainey), Glossinidae (A. M. Jordan), Bloodsucking Muscidae (Crosskey), House Flies and Blow Flies (Crosskey and Lane), Myiasis (M. J. R. Hall and K. G. V. Smith), Blattaria (N. R. H. Burgess), Blood-sucking Hemiptera (C. J. Schofield and W. R. Dolling), Anoplura (J. Ibarra), Siphonaptera (R. E. Lewis), Minor Groups (Smith), Acari (M. G. R. Varma) (twice mistyped "M.R.G.," pp. ix, 597), and Araneae and Scorpiones (J. L. Cloudsley-Thompson). American readers may be surprised to see only one of their own (Lewis) on this list. Of course, editors will always opt for geographic propinquity in selecting their contributors, but I like to think that an element of poetic justice has prevailed here, given the contumelious treatment of medical entomology in most American universities and research institutions.

Any author who has ever chafed at editorial strictures should be required to examine this book, which reads like the product of a single intelligence. Almost without exception, each of the systematic chapters embraces 7 subheadings: recognition and elements of structure; classification and identification; biology; medical importance; control; collecting, preserving, and rearing material; and references. As well, most chapters contain layman-friendly familial, subfamilial, or generic keys that skillfully bypass unnecessary terminology. But for overall conciseness and impact, my favorites are the tables, each of which summarizes a world of biomedical information in the span of just one or 2 pages. Among the strongest of these are Table 4.2, vectors of *Leishmania* species infecting man (pp. 108–109), arranged by sand fly species, *Leishmania* species, vector distribution, and vector competence; Table 5.2, primary and secondary *Anopheles* vectors of malaria (pp. 198–199), arranged by epidemiological zone; Table 5.3, mosquito-transmitted filarial parasites of man (pp. 202–204), arranged by filaria species and form, endemic zone, and primary and secondary vectors; Table 6.2, onchocerciasis vectors and other man-biting black flies (pp. 268–269), arranged by zoogeographic region and species, principal area as pest or vector, and importance to humans; Table 9.1, geographic distribution of *Glossina* species and subspecies (pp. 344–345), arranged by group (*G. fusca*, *G. morsitans*, *G. palpalis*), taxon, continental region, and country; and Table 13.1, pathogenic organisms found nat-

urally infecting cockroaches (p. 481), arranged by group (bacteria, fungi, helminths, Protozoa, viruses), organism, and type of infection. These alone had me running for my checkbook.

Wherever a net is broadly cast, it is bound to occasionally come up short, and the present work is no exception. I am irked by demeaning references to the "ubiquitous morphological" (p. xiii) or "merely anatomical" (p. 2) approach to arthropod identification—especially in a text that relies exclusively on this method. No serious investigator in medical entomology has any argument with identification techniques drawn from biochemistry, cytogenetics, or molecular biology. But although these may resolve unusually vexing or critical sibling complexes (e.g., the *Anopheles maculipennis* complex, p. 164; the *Simulium damnosum* complex, p. 255), the day-to-day business of taxonomy will always be rooted in morphology because, given the constraints on research budgets, only this method can adequately comprehend the world's staggering organic diversity.

The General Introduction contains a summary of classification and nomenclature (pp. 1–12) in which the editors assert, perhaps unwittingly, that a taxon is a classificatory category. On the contrary, as Ernst Mayr has long labored to make clear, a taxon always refers to a concrete biological object. Thus, the tick *Dermacentor variabilis* is a taxon but the species category itself is not. Of greater concern is the editors' refusal (pp. xiv, 7) to provide describers' names for species-level or higher taxa anywhere in the text—even in the index to scientific names! For nonspecialists this is particularly distressing because, like it or not, most systematic journals continue to require describers' names, at least when taxa are first mentioned in the body of a paper. Moreover, to serious students, the describer's name speaks of when or where a taxon was recognized and, often, how well. For example, as a medical acarologist, I am reassured by seeing the name Kohls appended to a specific epithet because the late Glen Milton Kohls belongs to the pantheon of mid-twentieth century American tick taxonomists. On the other hand, the German Leopold Ernst Paul Schulze is now chiefly associated with numerous minor infraspecific variants that have only served to lengthen the synonymies of several common and widespread tick species (in fairness, we should remember that Schulze was active during the Great Depression and Second World War, upheavals that confined him to armchair taxonomy at his home in Rostock). How unfortunate that a book destined to be a lasting taxonomic reference has debarred the names of taxonomists themselves.

Some years ago, at the conclusion of a seminar, I was accosted by an inexperienced technician with this taunt: "How can you devote your life to ectoparasites when you must know that most of them are going to become extinct by the middle of the next century?" It is true that we stand at the precipice and that decades not distant will witness extinctions on a par with the close of the Cretaceous. Even in the text at hand, Jordan (p. 380) notes the massive (albeit unintentional) destruction of tsetse fly puparia by Africans increasingly desperate for firewood. Yet the coming catastrophe signals more work for medical entomologists, not less. And here too I part with Lane and Crosskey's approach.

The current pace of urbanization is unprecedented in the whole of human history. Throughout the "developing" world, tens of millions of people are heading for the city, some because their pitiful postage stamp of farmland has finally been eroded to bedrock (as in India), others because of "ethnic cleansing" in the countryside (tropical Africa), or simply the siren of unbridled enterprise (coastal China). To shantytowns that now cover hundreds of square kilometers, these urban immigrants bring formerly rural pathogens that are readily transmitted by clouds of vector arthropods breeding in sewage and offal. Knudsen and Slooff recently listed 10 major vectorborne diseases that have made the transition to urban centers of developed and developing countries alike (Bull. W.H.O. 70[1]: 1–6; 1992), chief among them malaria, filariasis, and dengue. Even amid affluence, vector-borne diseases have acquired an urban infection. As a child in the New York City suburbs, I never saw a specimen of *Ixodes scapularis*, the primary vector of Lyme disease in the crowded northeastern United States. Today, this species infests the swankest of lawns and gardens, having invaded the suburbs with herds of quasi-domesticated deer. Again in the Northeast, the so-called lone star tick, *Amblyomma americanum*, was once unknown north of the New Jersey pine barrens. But now this pest species—and possible vector of human ehrlichiosis—abounds throughout the length of Long Island, a sliver of glacial moraine that is home to nearly seven million people. Who in the Northeast talks of ectoparasite or other pest extinctions? Then why does Lyme disease merit only a short paragraph of platitudes (p. 629) in Varma's chapter on medically important acarines? I dearly wish that Lane and Crosskey had instructed their contributors to address the one overwhelming certainty facing the next generation of medical entomologists: the urbanization of the earth.

These disclaimers aside, *Medical Insects and*

Arachnids is a pool of biosystematic information well worth plumbing. With its abundance of illustrations (more than 700 drawings, photographs, and maps) and emphasis on easily discernible morphological features, this book should be especially welcome in university teaching laboratories. And although it glosses over some emerging concerns, its 1,774 chapter references,

current through early 1993, should effectively guide students along their chosen routes of inquiry.

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BOOK NOTICES

HEALTH HINTS FOR THE TROPICS, XI Edition. Martin D. Wolfe (editor). 1993. American Society of Tropical Medicine and Hygiene, 60 Revere Drive, Northbrook, IL 60062. 51 pp. \$5.00.

PARASITIC DISEASES IN WATER RESOURCES DEVELOPMENT. THE NEED FOR INTERSECTORAL NEGOTIATION. J. M. Hunter et al. 1993. WHO, Geneva. 152 pp. U.S. \$31.50.

MALARIA CONTROL AS PART OF PRIMARY HEALTH CARE. REPORT OF A WHO STUDY GROUP. 1984. Technical Report Series No. 12:1-73. U.S. \$7.20.

GUIDELINES FOR ARBOVIRUS SURVEILLANCE PROGRAMS IN THE UNITED STATES. C. G. Moore et al. 1993. CDC Division of Vector-Borne Infectious Diseases, P. O. Box 2087, Fort Collins, CO 80522. 83 pp.